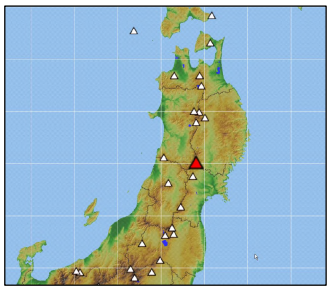
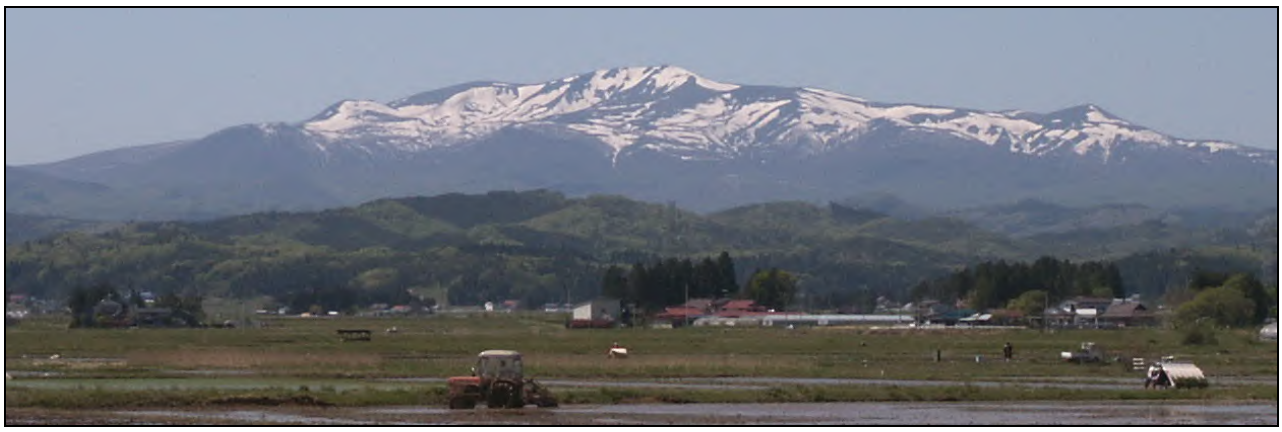
# 30. Kurikomayama



**Continuously Monitored by JMA**

Latitude: 38°57'39" N, Longitude: 140°47'18" E, Elevation: 1,626 m
(Kurikomayama)
(Triangulation Point - Sukawadake)



Overview of Kurikomayama. Photo taken from Miyagi Prefecture on April 30, 2002. Courtesy of K.Fujita.

## Summary

Kurikomayama is an andesite stratovolcano. Only the southern side of its somma remains, and Dainichidake, the volcano's highest peak, is located at the easternmost edge of that somma. Tsurugidake is a flat lava dome with a high level of fumarolic activity. The youngest age of the ejecta of the volcanic body is about 110,000 years ago. It is possible that the newer lava dome formed within these several tens of thousand years (Fujinawa et al., 2001). The $SiO_2$ content of andesite is between 55.4 and 57.9 wt %.

Activity in the historical era includes eruptions and mud emissions within the explosion crater. Seismic activity is very high in the volcano's vicinity. The mountain is also called Sukawadake or Dainichidake.

## Photos

Northern Flank. Photo taken from the north side on May 24, 2004. Courtesy of the Iwate Prefecture Police Department. Showa Lake and Zettasawa are at the top left.

Showa Lake. Photo taken from the east side on June 2, 2004. Courtesy of the Iwate Prefecture Police Department.

Figure 30-1 Dead Trees on the eastern flank of Tsurugidake. Photo was taken in July 2006. Dead trees extend over an area roughly 200 m wide in a east-west direction on the eastern flank of Tsurugidake and on the north side of Showa Lake. Courtesy of N. Doi.

## Red Relief Image Map

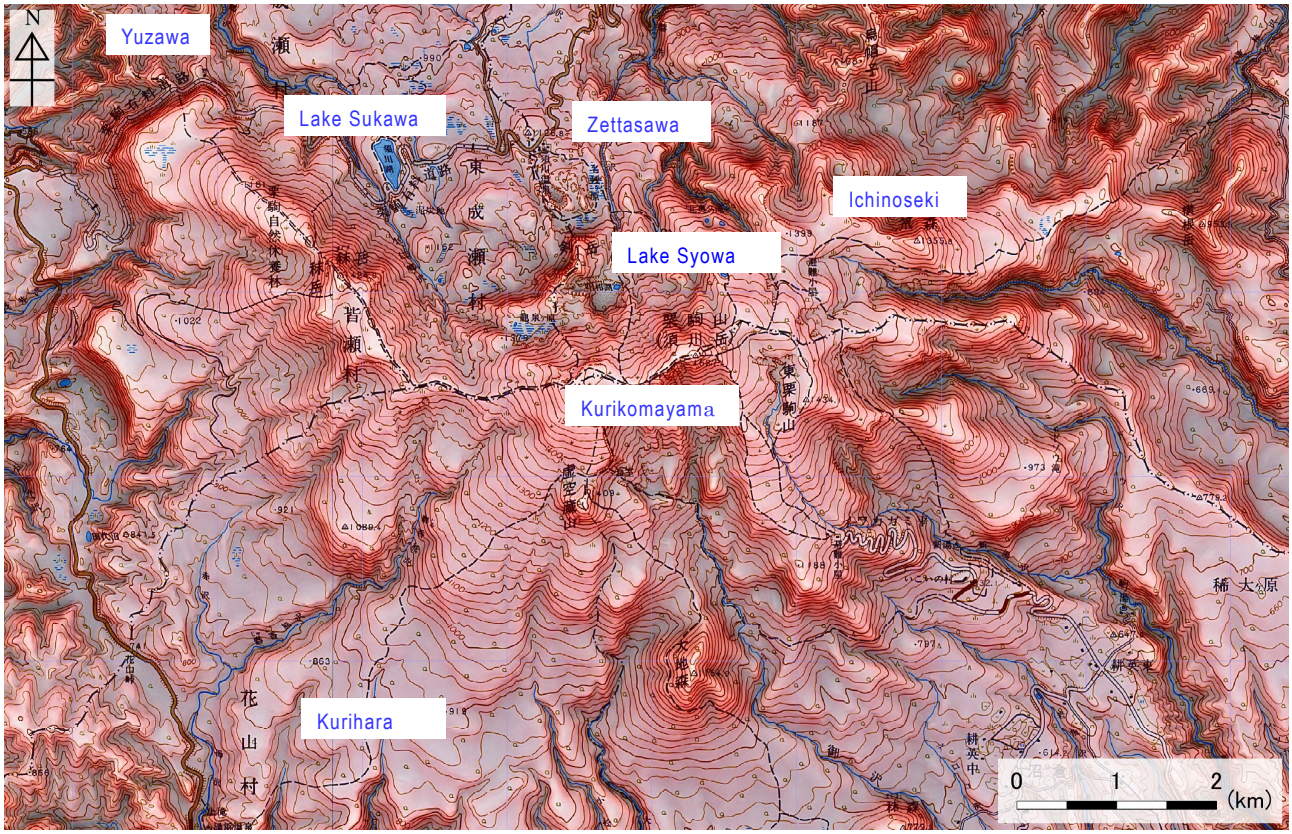



Figure 30-2 Topography of Kurikomayama.
1:50,000 scale topographic maps (Akinomiya and Kurikomayama) and digital map 50 m grid (elevation) published by the Geospatial Information Authority of Japan were used.

## Chronology of Eruptions

### ・Volcanic Activity in the Past 10,000 Years

No detailed age analysis results were reported for the eruptive activity within the past 10,000 years. Analysis of volcanic ash found in the surface soil (Kuroboku) distributed over the northern flank of the summit and in the summit area indicates that after AD 915 (Towada-a volcanic ash), at least, 2 phreatic explosions occurred, including small explosion in 1944, and in the period between approximately 5,400 years ago, Towada-Chuseri volcanic ash, and 915 years ago, at least, two phreatic explosions occurred. These phreatic explosions occurred in the eastern part, near Ubunuma, the center part, and the western part, near Showa Lake crater formed in 1944, of the northern flank. These area are about 750 m wide, stretching from the east-northeast to the south-southwest, where 47 craters exist. Some craters of phreatic explosions are arranged along the main scarp of a large landslide, which indicates that the explosions occurred at the same time as a landslide. In recent years, dead trees near Showa Lake are considered to have been killed by volcanic gas (Doi, 2008: Figure 30-1).

| Period | Area of Activity | Eruption Type | Main Phenomena / Volume of Magma |
|---|---|---|---|
| 6.1←→1.085ka | | Phreatic eruption | Tephra fall. At least 2 times. |

* Reference documents have been appended with reference to the catalog of eruptive events during the last 10,000 years in Japan, database of Japanese active volcanoes, and AIST (Kudo and Hoshizumi, 2006 ) for eruptive period, area of activity and eruption type. All years are noted in calendar years. "ka" within the table indicates "1000 years ago", with the year 2000 set as 0 ka.

A←→B: Eruptive events taking place at some point between year A and year B.

### ・Historical Activity

| Year | Phenomenon | Activity Sequence, Damages, etc. |
|---|---|---|
| 1744 (Kanpo 3) | Eruption | On February 3 the Iwai River suddenly dried, and mountain rumbling and a lahar flow which included large trees occurred. A volcanic plume was later observed, and mountain rumbling occurred occasionally. |
| 1944 (Showa 19) | Small-scale: Phreatic eruption | Tephra fall. The eruptive activity occurred at Showa Lake. On November 20, mud was discharged, water of the Iwai River discolored, and many fishes were killed. Eruption occurred on the northwestern flank of the highest peak, Dainichidake, at an elevation of 1280 m above sea level. It scattered mud and formed a depression, which later filled with water, and became known as "Showa Lake". (VEI 1) |
| 1946 (Showa 21) | Hot spring anomaly | In June, the acidity of the waters in the Sukawa hot springs and Iwai River increased. |
| 1950 (Showa 25) | Rumbling | On January 18, rumbling occurred near the eruption crater. |
| 1957 (Showa 32) | Rumbling, earthquake and hot spring anomaly | During August 11 to 15, 64 incidents of rumbling and earthquake swarms. The water from the Akinomiya hot spring temporarily discolored white. |
| 1985 (Showa 60) | Earthquake | In March and April, earthquake swarm at the foot of the volcano approximately 10 km to the southwest, with a maximum magnitude of M5.3. |
| 1985 (Showa 60) | Earthquake | In March and April, earthquake swarm at the foot of the volcano approximately 10 km to the southwest, with a maximum magnitude of M5.3. |
| 1986 to 1987 (Showa 61 to 62) | Earthquake | During June 1986 to December 1987 earthquake swarms at the northeastern foot of the volcano, with a maximum magnitude of M5.0. |
| 1992 (Heisei 4) | Fume | Fume temperature increase and expansion of fumes area at Zettasawa. |
| 1994 to 1995 (Heisei 6 to 7) | Earthquake | Slight increase in seismic activity at northern, southeastern, and northeastern feet of the volcano from October to April of the following year, with a maximum magnitude of M2.2. |
| 1996 (Heisei 8) | Earthquake | In April and May, earthquake swarm at the southern foot with a maximum magnitude of M3.3. |
| 1999 (Heisei 11) | Earthquake | In January, earthquake swarm at the eastern foot with a maximum magnitude of M4.0. |
| | Earthquake | In April, and May, earthquake swarm at the northeastern foot, with a maximum magnitude of M4.3. |

| Year | Phenomenon | Activity Sequence, Damages, etc. |
|---|---|---|
| 2008 (Heisei 20) | Earthquake | On June 14, the Iwate-Miyagi Nairiku Earthquake with a magnitude of M7.2 (maximum seismic intensity of 6+ on the JMA scale) occurred at a depth of 8 km in the southern part of Iwate Prefecture, approximately 10 km of northeast the summit. Damage near the foot included a large landslide near the Aratozawa Dam in Kurihara City, and the filling of Komanoyu spa by a debris flow. The aftershocks encompassed an area approximately 45km long, from north-northeast to south-southwest. Kurikomayama is located within the aftershock area, but not particular changes in earthquake activity were observed. |

* Reference documents have been appended with reference to the catalog of eruptive events during the last 10,000 years in Japan, database of Japanese active volcanoes, and AIST (Kudo and Hoshizumi, 2006) for eruptive period, area of activity and eruption type.

## Recent Volcanic Activity

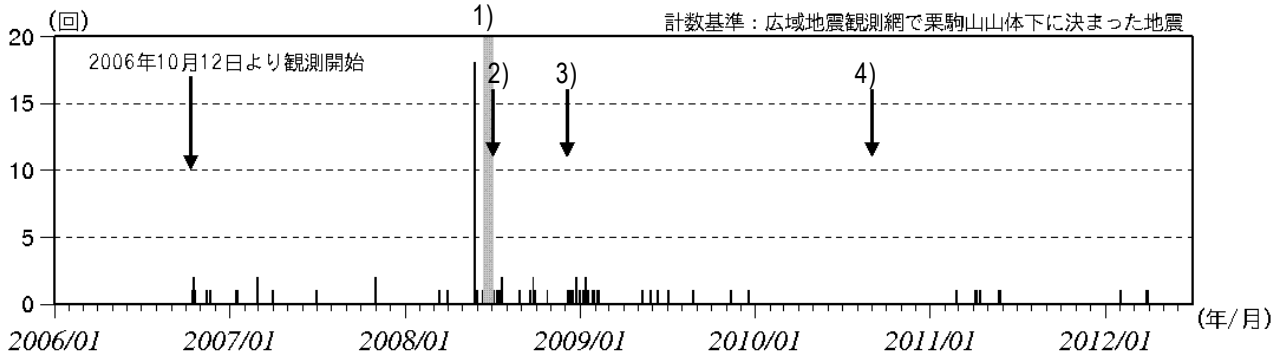



Figure 30-3 Number of earthquakes per day (October 12, 2006 to June 30, 2012). 1) Observation started on October 12, 2006 at the former Koei observation point (approximately 4km southeast of the summit). 2) Observation was impossible from June 14 to 18:00 on July 2, 2008, due to the damage by Iwate-Miyagi Nairiku Earthquake. 3) Monitoring started at 18:00, July 2, 2008 at the Oyasu observation point (approximately 10km northwest of the summit). 4) Observation resumed at the former Koei observation point from December 4, 2008. 5) Observation started on September 1, 2010 at the new Koei observation point (approximately 4 km southeast of the summit, in roughly the same location as the former Koei observation point).

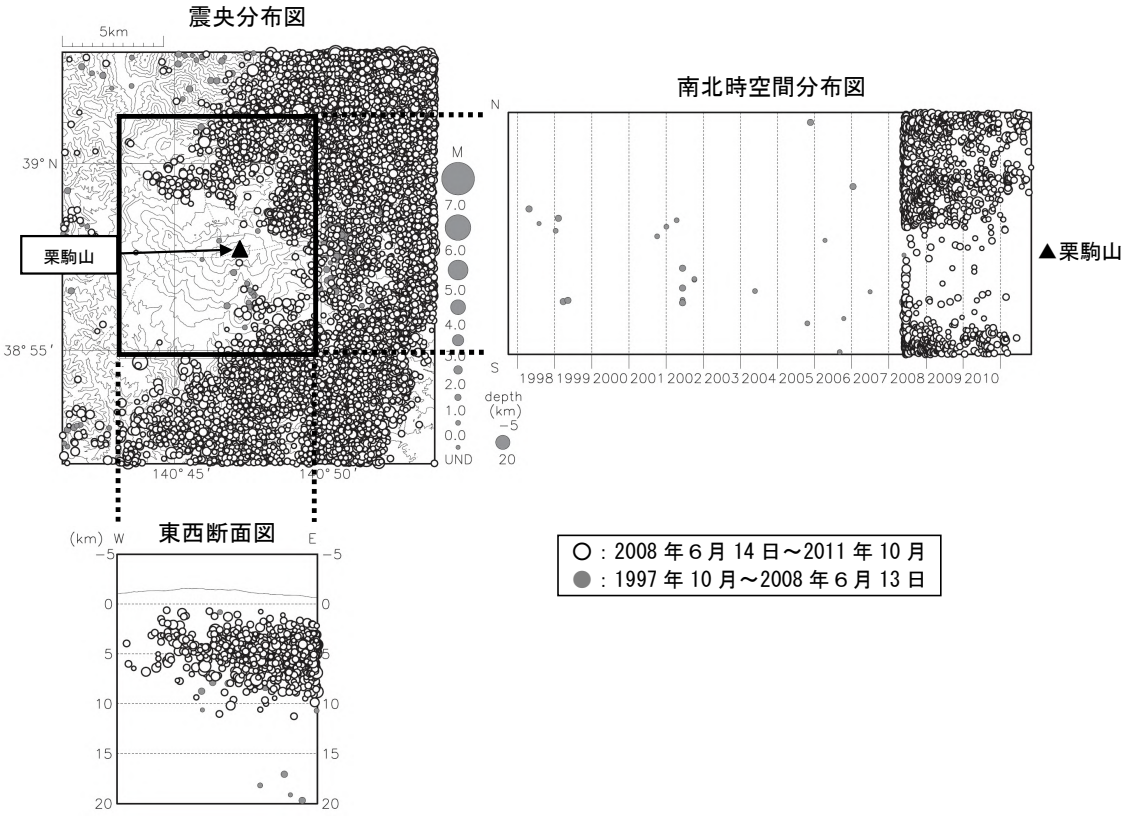



Figure 30-4 Seismic activity in the Kurikomayama area observed in a wide earthquake-monitoring network (October, 1997 to October, 2011). Epicenter distribution (upper left), N-S space-time plot (upper right) and E-W cross-section (lower lrft).

## Information on Disaster Prevention

①Hazard Map

None

## Social Circumstances

①Populations

- Iwate Prefecture

  Ichinoseki City: 123,294 (as of March 31, 2008, according to the annual report of basic resident register)

- Akita Prefecture

  Higashinaruse Village: 2,833 (as of October 31, 2011, according to the Higashinaruse Village website)

- Miyagi Prefecture

  Kurihara City: 75,924 (As of September 30, 2011)

②National Parks, Quasi-National Parks, Number of Climbers

- Kurikoma Quasi-National Park

  Number of sightseers per year: Approximately 368,000 (according to 2010 sightseeing statistic summary of Akita Prefecture)

  ditto: 140,300 (number of visitors to Iwakagamidaira (Kurikomayama), according to 2010 sightseeing statistic summary of Miyagi Prefecture)

  Number of mountain-climbers per year: 58,649 (according to 2009 sightseeing statistic summary of Iwate Prefecture )

③Facilities

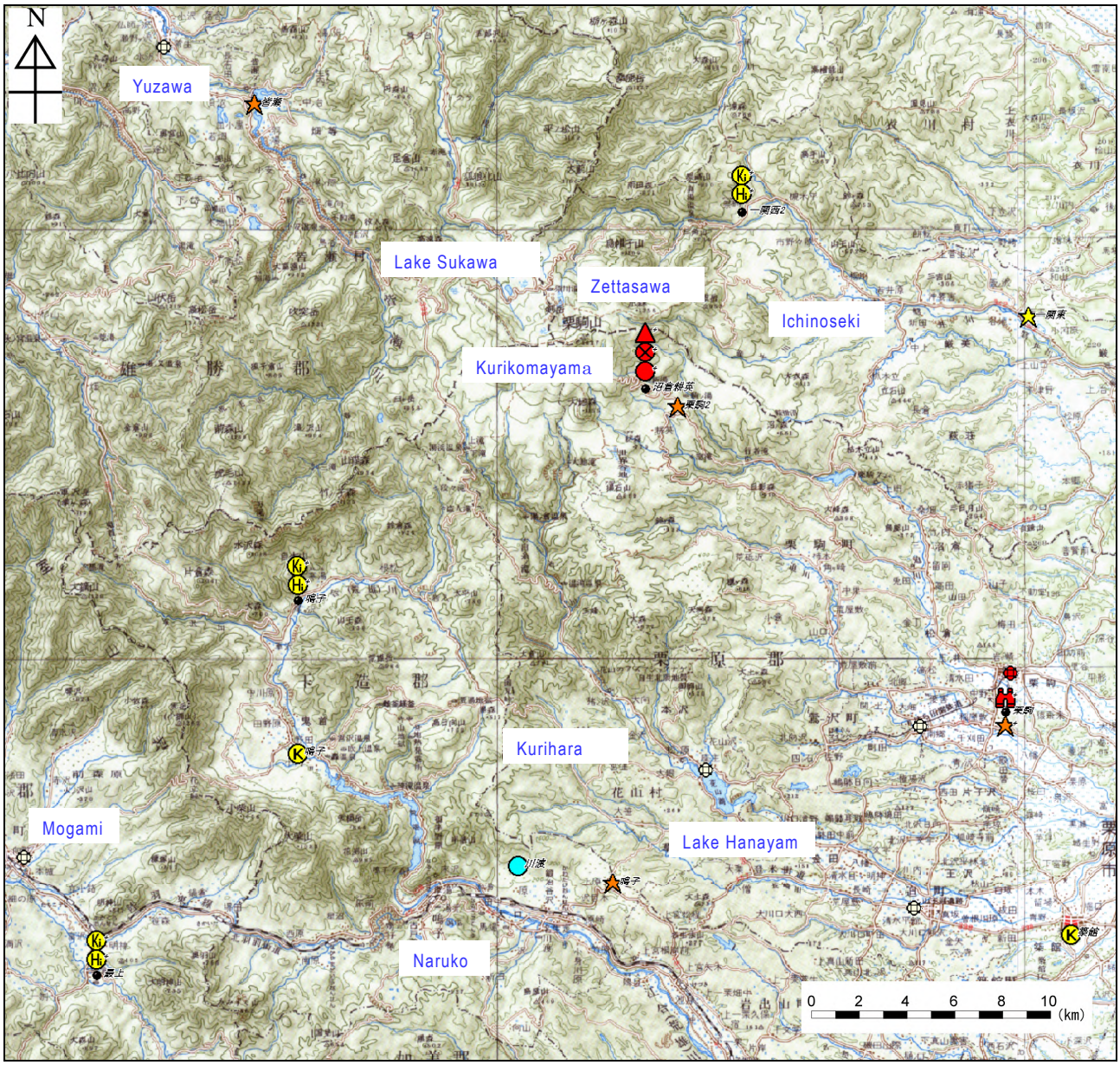
- Ichinoseki City, Iwate Prefecture

  Sukawa Visitor Center

## Monitoring Network

### Wide Area

* Monitoring sites with multiple observation instruments are indicated by small black dots, and other symbols indicate types of monitoring.




1:200,000 scale regional maps (Shinjo, Ichinoseki, Sendai, and Ishinomaki) published by the Geospatial Information Authority of Japan were used.

Legend

(JMA)
- seismometer(SP)
- tiltmeter
- infrasonic microphone
- visual camera
- seismic intensity meter

(GSI)
- GPS

(NIED)
- Hi-net
- K-NET
- KiK-net

(Tohoku Univ.)
- seismometer(SP)

(Municipalities)
- seismic intensity meter

Figure 30-5 Regional monitoring network.

## Bibliography

Doi, N. (2008) Report of CCPVE, **95**, 5-10 (in Japanese).

Fujinawa, A. et al. (2001) Bull. Volcanol. Soc. Japan, **46**, 269-284 (in Japanese with English abstract).

(Nakada, S., and Ueki, S.)